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An **A**ccelerated **V**irtual **A**nalyst for Commercial Credit Secured by Real Estate and/or Equipment Using Generative AI Large Language Model Systems

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**Executive Summary**

An Accelerated Virtual Analyst (“AVA”) for commercial lending secured by real estate and/or equipment seeks to improve core operations, namely sales and credit functions, by pairing skilled human expertise with Generative AI Large Language Model (LLM) computing systems. This innovative platform will enable its users to interact with a vast array of complex credit data through intuitive, conversational interfaces. By combining the computational and analytical prowess of AI with the nuanced understanding of skilled professionals, a virtual credit analyst enhances decision-making, improves core operations and customer engagement.

**Introduction**

At its core, an Accelerated Virtual Analyst amplifies human potential by harnessing the speed, accuracy, and depth of AI. It enables sales and credit teams to navigate and interpret complex data landscapes through simple natural language, effectively turning the "ocean" of credit data into accessible, actionable insights. This collaborative synergy aims to enhance decision-making precision, elevate operational efficiency, and deliver financing solutions with unprecedented agility.

A trained virtual credit analyst will enable human operators to query, analyze and engage with credit data as naturally as having a conversation with a colleague. The system is designed to empower finance professionals, augmenting their capabilities and allowing them to focus on what they do best - delivering superior financing solutions to business customers and borrowers.

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***Convergence Era of the Unique Strengths of Humans and AI:***

- **Human Professionals** can understand complex, nuanced contexts, make judgment calls based on a mosaic of information, and engage in creative problem-solving. Humans excel in tasks requiring emotional intelligence, such as understanding customer needs, negotiating deals, and fostering relationships.
- **Generative AI and AI at large**, on the other hand, excel in processing and analyzing vast amounts of data at speeds and scales unattainable by humans. AI can identify patterns, make predictions based on historical data, and automate routine tasks, thereby enhancing efficiency and accuracy. With limitless capacity to process and prepare credit data, output is only limited by the domain expert's capacity to prompt the AI.
- **Collaborative Synergy** is the guiding principle. Collaboration between humans and AI is not about replacing human roles with machines but enhancing human capabilities with AI's analytical power. This collaboration allows for: a) Increased efficiency and capacity, b) Enhanced decision making and c) Innovation and creativity. Important to note that AI will not replace human professionals. Humans using AI will replace humans that do not.

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**Vision Statement**

Redefine the boundaries of decision-making and customer engagement, harnessing the power of artificial intelligence to unlock a future in secured lending where accessing and interacting with complex credit data is as simple and intuitive as conversation.

**Mission Statement**

Bridge the gap between highly trained human expertise and artificial intelligence. Empower financing professionals with an advanced, intuitive platform to do more, better. Through conversational interactions with comprehensive credit data, a trained virtual credit analyst provides the sales and credit team with unparalleled access to data and information, enhancing decision-making and customer engagement.

**The Problem**

Sales and credit teams are the core operations of a commercial lender. These are revenue-generating, customer-facing roles that are often bogged down by bottlenecks, slow processing of credit data, manual double+ data entry, and a high propensity for errors, making it ripe for technological enhancement with a superior computational tool that delivers material results. A virtual credit analyst powered by GenAI LLM technology addresses material operational challenges by delivering a system that not only automates the management of all credit data but also enriches it with insights derived conversationally with the GenAI LLM, transforming how financing professionals interact with the information, each other, customers and all stakeholders involved in the business of commercial lending secured by real estate and/or equipment.

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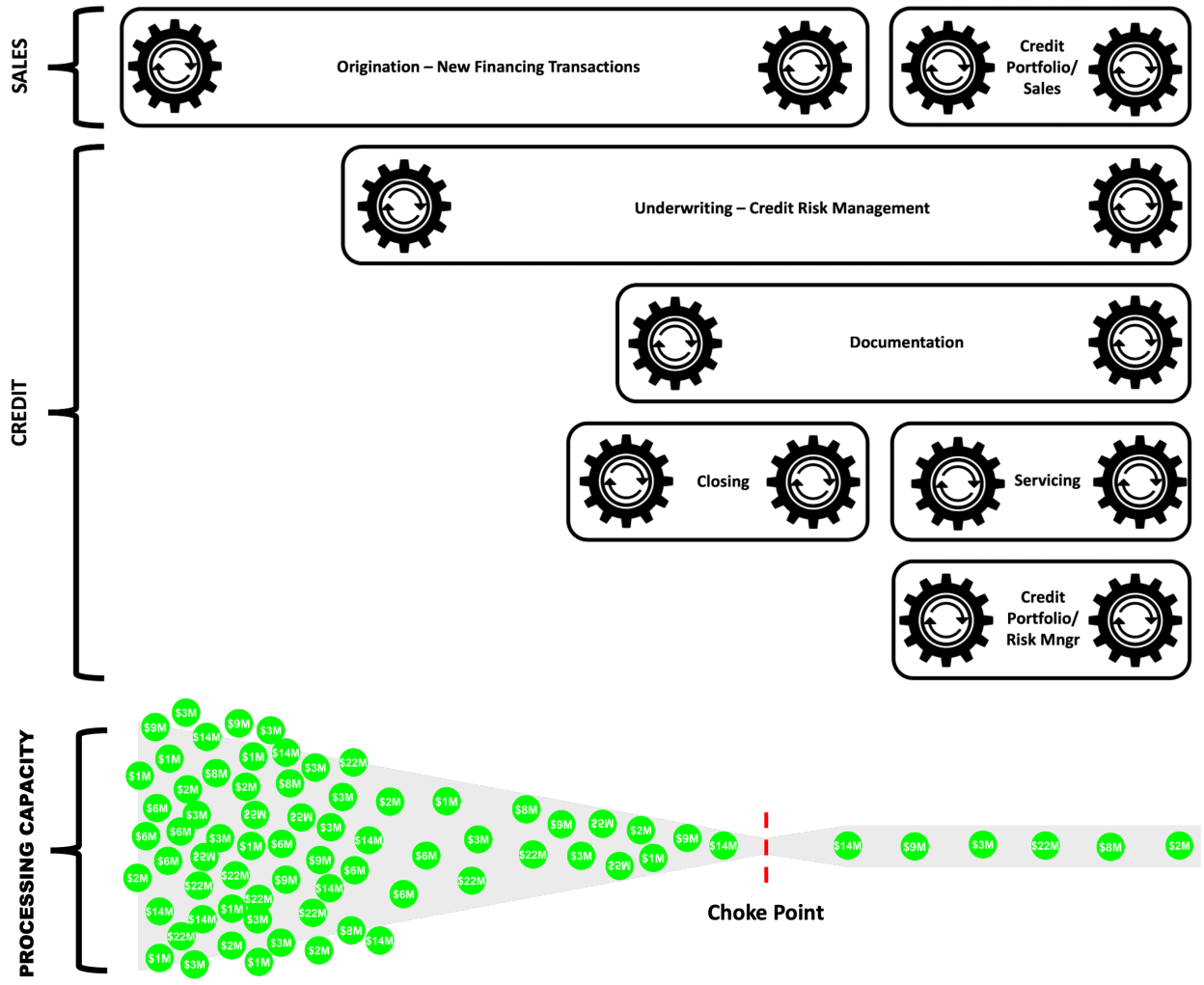
**The Problem Explained**

A good credit analyst gathers, prepares and presents financial analysis and credit data to determine a degree of risk involved with extending commercial credit to businesses. A credit analyst also works alongside an experienced credit underwriter to establish a record of transaction data for the lender and the "analyst's mosaic" of strengths and concerns-mitigates. A recommendation to the lenders' credit committee for decisioning follows the analyst's workflow. This involves a significant amount of "credit data" that is being managed, stored, analyzed and shared on disparate systems, often manually. Limited bandwidth and processing capacity of complex credit data by skilled credit officers is a persistent problem and chokepoint.




To understand the problem being solved within a commercial financing operation, it's important to understand the **"Choke Point"** within a sales-credit-closing team. In a traditional credit shop that chokepoint exists industry-wide, with varying degrees, due to the volume of digital credit data involved with any transaction underwritten for approval, funding, boarding and servicing.

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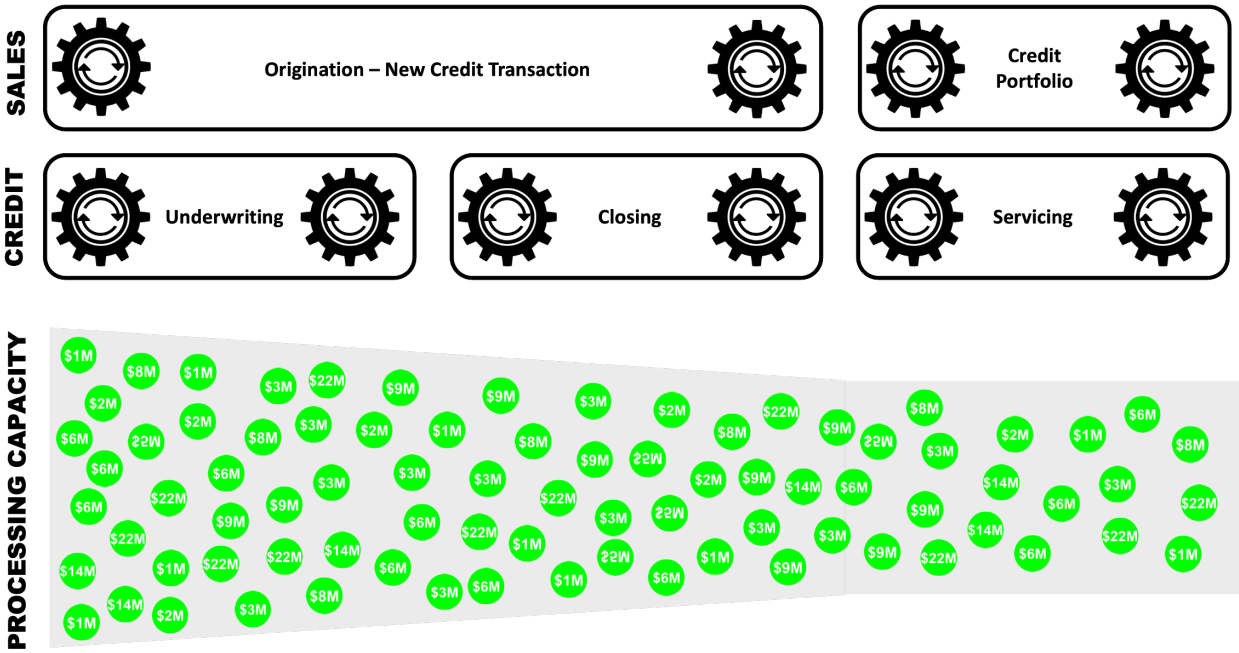
**The Solution Envisioned**

Natural Language Processing (NLP) is a field of artificial intelligence that focuses on enabling machines to understand, interpret, and generate human language. It involves the use of algorithms and computational techniques to analyze, manipulate, and produce human language data. Large Language Models (LLMs) are a type of generative AI that use deep learning techniques, such as neural networks, to learn patterns and relationships in language data, and can generate high-quality, human-like text and data. This technology is the enabler.

As these technologies hit enterprise-grade status, this means that skilled humans can communicate with the AI and harness its strengths and benefits through conversation. Generative AI solves the human hurdle with respect to using AI in an operational setting. That is, delivering a conversational interface with AI and a natural means to interact with the complex, private data landscapes within the financing enterprise. Particularly credit and transaction data.

A trained virtual credit analyst using AI-enabled systems and accessible database technology can assist with question-answer sessions, wherein a user asks a question and gets a qualified answer and output. A VCA that is trained on enterprise data solves a significant problem in core operations by vastly expanding processing capacity and bandwidth.




An LLM GenAI-powered virtual credit analyst expands processing capacity by bringing AI to the commercial credit data and enabling human-AI interaction with the data. The AI model resides in a private environment, so the data is secure and protected by enterprise firewalls. The enormous benefits of bringing AI to enterprise data is just the next step in the decades-old transformation to go “paperless” and digitize all the information.

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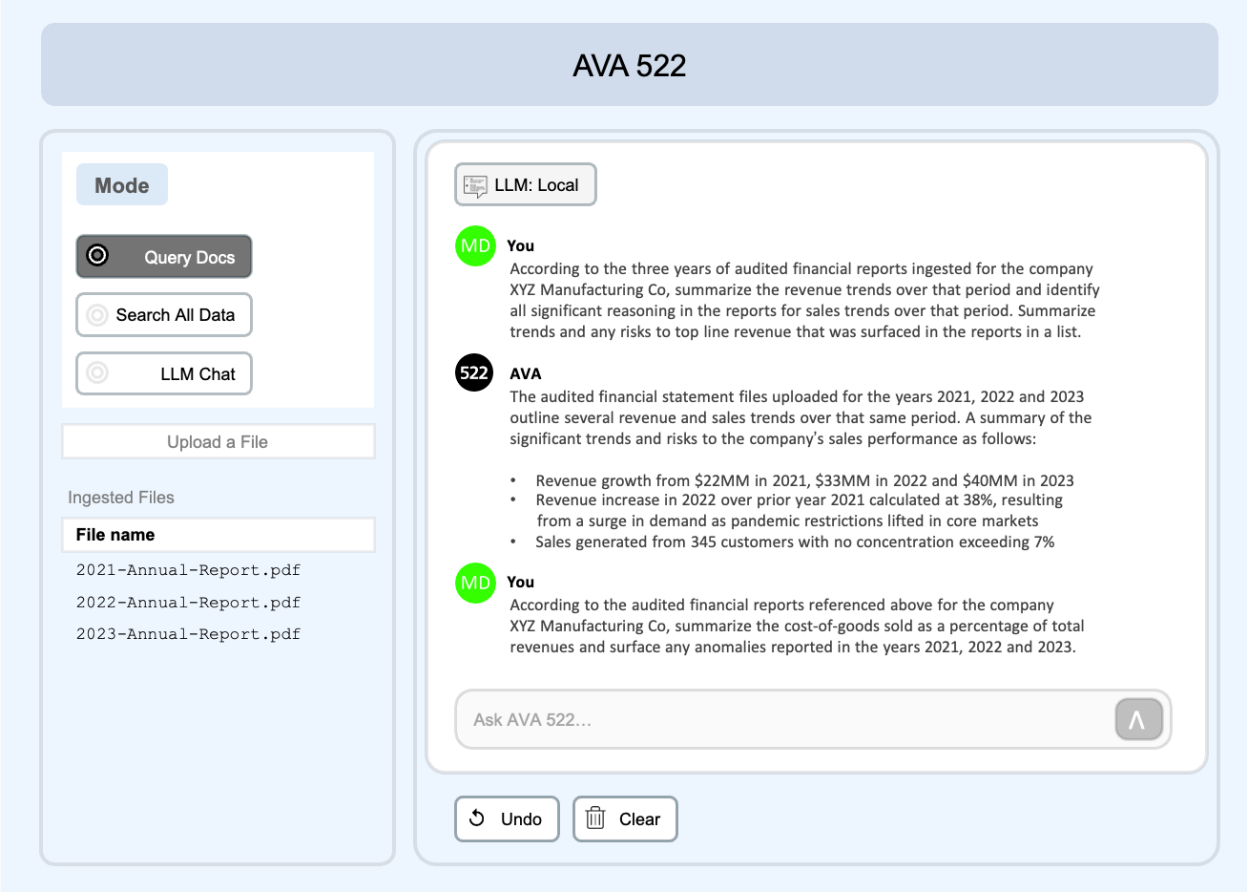
**The Solution**




***Key Features:***

- **Data Integration and Management:** Utilizing a sophisticated, vendor-neutral platform to manage both structured and unstructured data via cloud computing data warehouse.
- **AI-Driven Interaction:** Powered by Generative AI to process natural language queries and generate insightful, actionable responses and credit summaries for human review.
- **User Interface:** A responsive, intuitive design that supports both text and voice interactions, tailored to meet the needs of financing professionals.
- **Security and Compliance:** End-to-end encryption, robust authentication mechanisms, and adherence to the latest financial data protection standards.

***Underlying Technologies at Work:***

- **Generative AI and NLP:** For dynamic interaction with data, transforming queries into insights and contextually relevant responses based on the data it accesses and analyzes.
- **Hybrid Data Architecture:** Combining the robustness of SQL NoSQL databases with the flexibility of Data Lakes to manage diverse data types. Data warehouse is AI-accessible.
- **Scalable Cloud Infrastructure:** Ensuring that the system can handle increasing volumes of transactions and data without degradation in performance.

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***Benefits for Sales and Credit Operations:***

- **Enhanced Decision-Making:** With real-time access to proprietary data and LLM GenAI-powered analysis, decisions are faster, based on data, and more accurate.
- **Operational Efficiency:** Streamlining data management and processing to free up professionals to focus on strategic tasks.
- **Improved Customer Engagement:** Personalizing customer interactions based on insights drawn from comprehensive data analysis.

**The Outcome**

This conversational interaction model fundamentally transforms how credit officers work with data. Instead of manually searching through databases or documents or endless spreadsheets, they can directly query AVA 522, receiving instant, detailed data and insights that would otherwise take hours to compile. This capability not only boosts efficiency and productivity but also allows credit officers to focus more on strategic or tactical decision-making and less on data retrieval and basic analysis tasks. By seamlessly integrating Generative AI with human expertise, AVA 522 offers a powerful tool for enhancing the accuracy, speed, and depth of credit analysis in the equipment financing industry. This translates to higher quality customer engagement, execution and drives sales.

**Implementation Strategy**

Phase 1: System design, assembly, training and pilot testing with a select group of users.
Phase 2: Full-scale implementation and integration with existing systems.
Phase 3: Continuous refinement and scaling with user feedback and system analytics.

**Conclusion**

An Accelerated Virtual Analyst system refines the human-AI partnership, where AI empowers every decision-making process, ensuring that our human expertise can navigate more strategically and creatively than ever before. In this new era, AI does not supplant us but supplements us, transforming vast data landscapes into navigable and actionable intelligence.

**Background**

Between 2020-2023 conducted nine (9) R&D trials called AI Credit® on 145 secured lending transactions totaling $150 million USD. In the capacity of Chief Credit Officer of a banked private credit fund implemented efficiency systems and researched neural networks, machine learning, predictive risk analytics and early versions of LLMs and generative AI in the context of commercial credit risk operations. Amidst several big hurdles and archived projects over the years, we made steady progress towards what works and what doesn't work. We invested in knowledge, and we found that skilled finance professionals using LLM generative AI to conversationally access, and 'talk-with-credit-data' is a winning application for our team. We use it and it works.

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